

CLAIMS:

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~~1. A base station configuration in a two-way communication~~
interactive video network having a network hub switching center for routing communications from and to a plurality of subscriber units at various geographic locations served by a base station that processes digital data modulated on an r-f carrier and transmitted from a plurality of subscriber units dispersed over a predetermined base station geographic area by presenting multiplexed digital data synchronously related to the base station broadcast signal for communication from identified individual subscriber units within designated geographic service areas, comprising in combination,

base station data processing and transmission facilities for transmitting to a set of local subscriber units and receiving from a subset of those local subscriber units multiplexed synchronously related digital data messages of variable lengths for point to point communication between individual subscribers with remotely located reception stations,

base station reception means for receiving and processing data messages from the set of local subscriber units at that base station comprising a set of cell subdivision sites partitioned from said base station geographic area and dispersed over the base station geographic area, each cell subdivision site being adapted for receiving-only low power digital messages transmitted from local subscriber units within range of the partitioned cell site areas, and

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~~a set of local subscriber transceiver units including low power mobile units located within the base station geographic area each adapted to communicate with said base station by way of digital data signals of variable lengths synchronously related to said television broadcast signal and timed for said multiplexed message transmission.~~

2. The base station configuration defined in Claim 1 wherein said hub switching center is located remotely from said base station, and said network comprises a plurality of base stations located in different geographic areas, further comprising,

data processing facilities in said base station and network for communicating designated digital data messages between local subscriber units in said predetermined base station geographic area and other subscriber units located in the vicinity of the base stations located in different geographic areas via said hub switching center.

3. The configuration of Claim 2 further comprising, message accumulation means in said base station data processing facilities operative to store and retransmit digital message packets from identified subscriber units comprising a sequence of subscriber transmission frames, and

processing means for retransmission of the digital message packets to the hub switching center by satellite.

4. The configuration of Claim 2 further comprising, subscriber unit management and transmission means for conveying messages from the base station to the hub switching center which processes a subscriber message data bit output from the base station at 2.560 kbaud.

5. The configuration of claim 4 further comprising a set of n isolated said cell sites, and assembling means for accumulating the messages from said n cell sites and transmitting the accumulated messages over said transmission means at a message data bit capacity of n times 2.560 kbaud.

6. The configuration of claim 5 further comprising means for interlacing 64 subscriber units for transmitting simultaneously multiplexed messages at said base station.

7. The configuration of claim 5 further comprising means for transmitting bit data rate at 5.16 kbaud from the home units to the assembling means.

8. The configuration of claim 2 further comprising means for transmitting messages from the different subdivided cell areas on different carrier frequencies.

9. The base station configuration defined in Claim 1 further comprising, means in said base unit for compensating for the time of propagation of messages between the different individual subscriber units and the base station data processing facilities.

10. The base station configuration defined in Claim 1 further comprising a transmitter for conveying messages from said base station to said subscriber units on a carrier frequency of substantially 218 MHz.

11. The base station configuration defined in claim 1 wherein each of said local subscriber units is individually identified by reception and transmission of digital signal pulses in a predetermined timing relationship synchronized with a television frame of said television broadcast signal.

12. The base station configuration in claim 1 wherein said local subscriber units comprise digital message organization means that disassembles a variable length digital message for transmission on a sequence of fixed length transmission frames.

13. The base station configuration in claim 1 further comprising receive only stations in said cell subdivision sites, and means for operating the base station and subscriber units to hand-off a communication message for transmission over a path through a single one of said cell subdivision receive-only stations.

14. The base station configuration in claim 13 further comprising subscriber units operable to transmit on a plurality of frequency bands, and receive-only receivers at different subdivision sites operable in different ones of said frequency bands.

15. The base station configuration in claim 13 which comprises one of a plurality of base stations in said network, further comprising facilities for handing off communications from a subscriber unit within the base station geographic area for communication through a network path of a different base station.

16. A point-to-point interactive video network system having a central switching station, a plurality of base stations, a satellite station, and a set of subscriber units located in the vicinity of each base unit, comprising in combination, means for providing for two-way digital communications between two different subscriber units by a serial communication path extending through a base station, the satellite, the central station, the satellite and back to a base station, wherein at least some of said base stations serve a set of subscriber units dispersed over a predetermined geographic area and comprise communication means between the subscriber units with the base station including a set of stationary receive only terminals remote from the base station coupled by a communication link with the base station for conveying transmitted messages from subscriber units in a subdivided portion of said geographic area in the vicinity of the receive only terminals to the base station, subscriber transmitter units for transmitting digital amplitude modulated pulses at a peak power in the milliwatt range, and data processing means at the base station for assembling and re-transmitting digital subscriber messages from the subscriber units via the satellite to the central station.

17. The system of Claim 16 wherein the subscriber units transmit solely in a digital mode.

18. The system of Claim 16 wherein the subscriber units transmit on a plurality of frequency bands.

19. The system of Claim 16 wherein the subscriber units are portable, and wherein the base station includes means to receive messages from the subscriber units through a single one of said receive only terminals.

20. The system of Claim 16 wherein each of the receive only terminals receives signals in a different frequency band, and the subscriber units have means for selecting a transmission carrier frequency in a plurality of the frequency bands.

21. A subscriber transceiver unit operable within a local geographical range of a base station serving a set of subscriber units adapted for two-way interactive video data service communication, comprising in combination,

a digital transmitter with a maximum power output in the milliwatt range,

receiver means for deriving synchronizing signals from a broadcast signal carrier, and

data processing means at the base station for synchronously multiplexing signals from a plurality of simultaneously transmitting subscriber units.

22. The subscriber unit of Claim 21, wherein said digital transmitter operates on a carrier frequency band in the order of 218 MHz.

23. The subscriber unit of Claim 21 battery operated and portable, and means at the base station for receiving signals from the subscriber unit at different positions in the geographical range of the base station.

24. The subscriber unit of Claim 21 wherein each subscriber unit has a different identification number, and means at the base station responsive to a broadcast identification number for one of the subscribers in said set for directing messages exclusively to a single subscriber in said set.

25. The subscriber unit of Claim 21 having facilities to transmit on a plurality of frequency bands.

26. The subscriber unit of Claim 21 having facilities for responding to an inquiry included in a base station transmission to set up conditions for a return transmission from the subscriber unit.

27. The subscriber unit of Claim 26 further comprising set up facilities for selecting a transmission path for the return transmission.

28. An interactive video data system having subscribers with portable subscriber units and facilities for communicating from the subscriber units when moved through different geographic zones.

29. The system of Claim 28 further comprising a set of battery operated subscriber units having a peak transmitting power in the order of milliwatts.

29. The system of Claim 28 further comprising a set of subscriber units limited to digital processing facilities comprising digital transducers and means for transmitting digital data derived by said transducers.

30. The system of Claim 28 wherein said system comprises a set of geographically separated base stations of defined geographic area, and said subscriber units have facilities for communicating during movement from one base station area to another.

31. The system of Claim 28 wherein said system comprises a base station of defined geographic area for serving a set of said subscriber units, said area is subdivided into a plurality of zones, and receive only stations located in said zones for reception of transmissions from subscriber units located in the respective zones.

32. The system of Claim 31 further comprising facilities in said base station and subscriber units for handing off communications between zones when communicated signals deteriorate below a given threshold.

33. A digital cellular communication system comprising in combination, a cell site divided into a plurality of subdivided zones, a plurality of subscriber units with identity numbers based in said cell site, a cell site communication system including a digital transmitter for communication with individual identified subscriber units geographically located within the cell site, a set of receive only digital receivers positioned in said subdivided zones, each said digital receiver being coupled by a transmission link with the cell site communication system to relay received digital communications, and a set of said subscriber units comprising portable wireless digital communication units with a limited power digital transmitter having a transmitting power for transmissions within the area of the subdivided zones and a receiver for reception of digital messages from said cell site digital transmitter.

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